Impact Challenges in Community Science-with-Practice: Lessons from PROSPER on Transformative Practitioner-Scientist Partnerships and Prevention Infrastructure Development

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Abstract

At present, evidence-based programs (EBPs) to reduce youth violence are failing to translate into widespread community practice, despite their potential for impact on this pervasive public health problem. In this paper we address two types of challenges in the achievement of such impact, drawing upon lessons from the implementation of a partnership model called PROSPER. First, we address *five key challenges in the achievement of community-level impact* through effective community planning and action: readiness and mobilization of community teams; maintaining EBP implementation quality; sustaining community teams and EBPs; demonstrating community-level impact; and continuous, proactive technical assistance. Second, we consider *grand challenges in the large-scale translation of EBPs*: (1) building, linking and expanding existing infrastructures to support effective EBP delivery systems, and (2) organizing networks of practitioner-scientist partnerships—networks designed to integrate diffusion of EBPs with research that examines effective strategies to do so. The PROSPER partnership model is an evidence-based delivery system for community-based prevention and has evolved through two decades of NIH-funded research, assisted by land grant universities' Cooperative Extension Systems. Findings and lessons of relevance to each of the challenges are summarized. In this context, we outline how practitioner-scientist partnerships can serve to transform EBP delivery systems, particularly in conjunction with supportive federal policy.

Keywords

Introduction

In his 2008 essay in the *Journal of the American Medical Association*, Stephen Woolf laments that failing to translate the science of preventive interventions into everyday community practice "costs lives;" this failure takes a tremendous toll on the health and well-being of US youth families and communities (Woolf 2008).

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At present, tested and effective preventive interventions to reduce youth violence reach only a small percentage of the population that could benefit from them (Backer and Guerra 2011). This special issue addresses a promising solution, namely, "community action among people and organizations in a community directed toward solving or reducing a problem" (Backer and Guerra 2011).

Backer and Guerra (2011) summarize a number of challenges in the translation of evidence-based interventions or programs (EBPs) utilizing community engagement strategies in everyday community practices (also see Backer 2000, 2003). In this paper we specifically address two types of *impact* challenges: (1) those key to achieving local, community-level outcomes; and (2) those central to broader state- and country-wide public health impact. We focus on what we consider to be *five key challenges in the achievement of community-level impact* through effective community planning and action: readiness and mobilization of community teams; maintaining EBP implementation quality; sustaining community teams and EBPs; demonstrating community-level impact; and proactive, continuous technical assistance. We have developed and tested a partnership-based delivery system model for engaging communities, called PROSPER, and we use it to illustrate how these challenges can be addressed. Findings of relevance to each of the challenges and lessons learned from PROSPER will be summarized.

Taking a somewhat broader perspective, there are *grand* impact challenges (see National Science Foundation, www.networkworld.com/community/node/25219 for a description of grand challenges) in the translation of EBPs: *building, linking and expanding existing infrastructures* to support effective EBP delivery systems, and *organizing networks of practitioner-scientist partnerships* designed to integrate diffusion of EBPs with research examining effective strategies to do so. These two challenges are "grand" because, if effectively addressed, they could have substantial public health impact and strengthen the translational research enterprise. Herein we address how the PROSPER partnership model uses existing public education infrastructures to support transformational practitioner-science-partnerships (also see National Implementation Research Network 2010) and to advance translational research.

To begin with a thumbnail sketch of the PROSPER Partnership Model, it is a tested and proven delivery system for large-scale, quality implementation of EBPs that serve youth and their families. The purpose of this delivery system is to reduce the prevalence of youth problem behaviors, enhance positive youth development and strengthen families. The PROSPER Partnership Model is designed for large-scale EBP delivery by linking the university-based prevention science community with two existing program delivery systems reaching virtually all communities in America—the Cooperative Extension System at land grant universities and the public school system. The PROSPER delivery system also is designed to provide ongoing, proactive technical assistance to assure that EBPs provided for youth and their parents are implemented properly, are supported in the community, and can be sustained over time. Importantly, PROSPER is oriented toward systems change and strengthening support for the partnership model in the state Cooperative Extension Systems within which it is embedded. Following further background information, the core components of the model will be described in detail.

Linking Public Education Program Delivery Infrastructures

The PROSPER partnership model has evolved through a program of NIH-funded research over the past two decades (see Spoth 2007, for an overview) and builds on existing public education infrastructures, linking the land grant university-based Cooperative Extension System with public school systems.

An earlier article summarized the PROSPER partnership model (Spoth et al. 2004) and described how linking capacity-building agents within public-education systems has supported sustained, quality delivery of EBPs. This approach is based on Rogers' (1995) work on Diffusion of Innovation Theory, in which he describes "change agent linking functions" that connect resource systems with client systems. Regarding PROSPER, the concept is that agents within the public schools are attempting to implement EBPs and can benefit from resources (e.g., training, technical assistance, evaluation, other services), provided by agents that link systems—such as the Cooperative Extension System. Clarifying how this works requires background information on the Cooperative Extension System and the PROSPER partnership model itself.

The Land Grant Universities' Cooperative Extension Systems: Science with Practice

Earlier articles have summarized the history, structure and function of the Cooperative Extension Systems (CES) vis-à-vis EBP delivery (e.g., Molgaard 1997; Spoth and Molgaard 1999; Spoth et al. 2004; Spoth and Greenberg 2005). Briefly, the CES is based in the land-grant university system and originated with the Smith-Lever Act in 1914. The CES was designed to serve university education and outreach functions and has evolved into the largest informal education system in the world (Coward et al. 1986). It reaches every county in the country, served by CES "agents" or educators, and has a strong orientation toward integrating science-generated innovation with practice. Historically, the CES effectively diffused agricultural innovation (e.g., hybrid seed corn), ultimately expanding its educational program innovations to family and youth areas (e.g., youth programming/4-H), with a focus on transferring relevant university research-generated knowledge and innovations to the general public. In many communities CES agents are an "invaluable, trusted and relevant source of education and support" (Molgaard 1997, p. 520).

An Evolving CES-Assisted Partnership Model

Earlier work beginning about two decades ago was directed toward delivering and testing family-focused and school-based prevention programming through the CES at Iowa State University (Spoth 2007); it yielded practical lessons about the benefits in working with the CES. For example, a NIH-funded pilot study of family-focused prevention revealed implementation barriers (e.g., problems with organizing local trainings and recruiting qualified local facilitators) that stood in contrast with earlier collaborative community-based programming with CES staff. In part, this motivated CES partnerships for two prevention trials (Project Family and Capable Families and Youth) and resulted in a partnership model evolving through the prevention trial implementations. This work set the stage for a 1998 ISU conference on Extension-assisted prevention research and collaborative development of the PROSPER partnership model in Iowa and Pennsylvania, the latter of which was intended to mobilize local community teams with the support CES technical assistants to *sustain* EBP delivery (Spoth et al. 2004). We have described this third generation partnership structure as our "sustainability model." Our positive findings from a randomized, controlled study of the PROSPER partnership model have, in turn, led to a fourth generation model for a new multi-state partnership network.

Most notably, our collaborative experiences with CES-assisted partnerships across multiple prevention trial implementations have supported the refinement of the community-university partnership model. The three-tier structure of the state partnership (described below) and its support of *bidirectional communication and collaborative learning* has been instrumental in meeting challenges to achieving long-term, community-level impact.

Core Components of the PROSPER Community-University Partnership Model

The PROSPER partnership model has five core components (see PROSPER Partnership Group, 2010). Hereafter, the PROSPER partnership model frequently will be referenced simply as the PROSPER model, or PROSPER.

Component 1: Small and Strategic PROSPER Community-Based Teams

Local PROSPER community teams are lead by county-based CES personnel (e.g., 4-H Youth Development or Family and Consumer Sciences CES educators/agents) and co-led by a school district staff member. Other school staff (e.g., superintendents, principals, curriculum directors, and educators) perform supportive roles. Additional team members include social- and health-service providers who coordinate prevention and treatment services, representatives from faith-based institutions, businesses, law enforcement, the juvenile justice system, or the media, as well as parent and youth representatives. Initially, PROSPER community teams are relatively small compared to most coalitions; they begin with between 8 and 10 members. As teams develop, they expand somewhat, engaging a range of community stakeholders who can influence recruitment of families for programs and/or help sustain and promote the programs. Community teams are intended to represent the diversity of the community and that appears to have increased their credibility and acceptance within the community.

Component 2: A Four-Tiered Partnership Structure

The State Level Partnership is made up of three levels or tiers that include specific groups of people doing specialized activities. The fourth tier is the network that links all state level teams to one another and to the PROSPER Network Team. Figure 1 presents the 3-tiered state partnership structure and 4-tier structure required for the PROSPER Partnership Network.

State Level Partnership—The Community level team is the first tier in the PROSPER model. This is the level at which EBPs are implemented and sustained. Key to this community team is the relationship built between CES and the school. Though beneficial, Team Leaders need not necessarily have extensive training in implementation of EBPs since the Prevention Coordinators and the State Management Team provide professional development opportunities and ongoing technical assistance. Team Leaders are selected to possess excellent communication, organizational and problem solving skills. They know how to motivate team members, are comfortable delegating responsibilities, and are committed to implementing the model.

School Co-Leaders typically are administrators (principal or assistant, counselor, curriculum director, or lead health educator). They work with the CES Team Leaders to maintain school involvement and ownership, ensure proper implementation of prevention programs, and share resources necessary to function effectively. The term "Co-leader" does not imply an equal division of leadership, but is meant to underscore the vital role of the school district. Co-leader responsibilities center on maintaining the school's support for PROSPER programs. Other team members actively engage in activities that promote and sustain programs.

The middle tier in Fig. 1 represents the Prevention Coordinator Team that provides technical assistance to the local community teams and serves a liaison function between the community team and the State Management Team, including prevention scientists or program evaluators. In their liaison role, they are highly interactive with both community

teams and the State Management Team. Prevention Coordinators work closely with community teams to maximize recruitment, quality implementation, and plan for sustainability. Prevention Coordinators provide targeted technical assistance to teams on all aspects of program adoption, implementation and sustainability. Prevention Coordinators attend local team meetings, facilitate and document partnership functions, and meet regularly with the State Management Team to share experiences and solve problems that may arise. They are selected for their communication, organization and problem solving skills, knowledge of prevention science, and the ability to supervise and motivate Team Leaders. Most importantly, they meet frequently and function as a team to support each other in their technical assistance work.

The final tier represents the State Management Team, comprised of university researchers, and CES program specialists and administrators. The Statewide Management Team supports PROSPER efforts through administrative oversight, evaluation support, and support for PROSPER within the CES.

PROSPER Network Team—The fourth tier is the National PROSPER Network, comprised of scientists, faculty, and professionals involved in original PROSPER project's land-grant universities in Iowa and Pennsylvania. As a state develops their three-tiered structure, they become part of a network of states that are supported by the National PROSPER Network Team which has developed over the past years, in order to expand the success of the model beyond Iowa and Pennsylvania. The Network Team remains in close contact with state-level partnerships to provide expertise and support ensuring that each State Management Team is successful in their efforts to implement the model. Each state has an assigned "state coach" to facilitate state efforts and communications with the larger network team.

Component 3: Evidence-Based Family-Focused and School-Based Programs

The PROSPER menu of programs focus on building youth competencies and preventing problem behaviors (both substance-related problems and conduct problems), supporting positive youth development, and improving family functioning. Initially, teams choose one family and one school program from the PROSPER menu of programs to implement in their community. All programs on this menu have been rigorously evaluated and shown to be effective. The chosen EBPs require training and continuous quality-control monitoring. Prevention Coordinators provide teams with the technical assistance they need to sustain high-quality program implementation. As community teams mature and demonstrate success on sustained quality implementation of initially selected EBPs, the menu of EBPs expands. PROSPER teams begin with family and school programs targeting early adolescence, but in the past few years, local teams have begun to support programs at the elementary school level. Work is underway to adapt the model to support EBPs targeting other outcomes (e.g., healthy lifestyle change, obesity prevention).

Component 4: A Multi-phased Developmental Model, Focusing on Sustainability

A developmental process to support teams and programs includes four phases, beginning with an organizational phase and ending in a long-term sustainability phase, with benchmarking of progress. Teams are introduced to a sustainability model that guides the development of plans with two primary goals. (More detail is provided in the discussion of findings and lessons learned).

Goal 1: Sustain Growth and Quality of EBPs—Indicators of success for this goal include long-term funding (as opposed to one-time donations or short-term grants); high

quality program implementation; and delivery of the family program to an increasing proportion of community youth and families.

Goal 2: Sustain Well-Functioning Teams—Indicators of success include regular, effective team meetings; high levels of team member engagement and commitment to quality programming; effective relationships among the PROSPER team, the school, and community groups; and effective communication, both among team members and between team members and other community stakeholders.

Component 5: Well-Integrated Process and Outcome Evaluation

PROSPER evaluation model includes process and outcome measures that address: (1) program implementation quality; (2) team functioning and team processes; (3) numbers of youth and families served; (4) and program outcomes, including measures of youth competencies and problem behaviors, and family functioning.

There are two basic types of evaluation. The first is ongoing *process* evaluation to help assure that PROSPER programming is implemented as designed. Monitoring the PROSPER implementation process informs the local PROSPER partnership (and its financial sponsors) about the degree of implementation quality and the likelihood of achieving positive youth and family outcomes. As such, process monitoring provides information to support continuous quality improvement by generating data that community teams, Prevention Coordinators, and State Management Teams can use to guide problem solving and optimize ongoing project activities. For example, data on various aspects of team functioning is used by community teams to gauge their progress and make improvements.

Second, *outcome* evaluation provides concrete data about the degree to which outcome objectives are met at the community level. The exact type of outcome evaluation will vary, depending on the evaluation resources or local data available and whether the PROSPER Partnership is participating in an outcome research project.

Currently, we are developing a completely web-based data system to support process and outcome evaluation.

PROSPER Findings and Lessons Mapping onto the Five Community-Level Impact Challenges

The original randomized-controlled PROSPER evaluation study was a collaboration of scientists at Iowa State University and the Pennsylvania State University and had two primary aims (Spoth et al. 2004). The first aim was to evaluate the efficacy of PROSPER. The second was to learn what factors are most predictive of effective local partnerships, focusing on EBP implementation quality and sustainability. The project included over 11,900 youth and also parents from 28 communities in Iowa and Pennsylvania.

Selected PROSPER findings and lessons highlight how the PROSPER delivery system addresses the five impact challenges of community-based prevention, starting with community readiness and mobilization for EBP implementation.

Readiness and Mobilization of Community Teams

All PROSPER teams were effective at building a positive team culture and accomplishing the benchmarks necessary to organize for—and effectively implement—family-focused and school-based EBPs. We have conducted yearly assessments of key team factors, including team member attitudes, experience, and perceived costs and benefits of efforts, along with

team culture, leadership and work style. Team culture and leadership in the first year (organizational phase) was related to community-level factors (community-level poverty), as well as attitudes and experience of team members. Team leadership and culture, plus community-level factors in the implementation phase, predict both the quality of sustainability planning as well as the amount of funding received during the early period of sustainability (Feinberg et al. 2007; Greenberg et al. 2007; Perkins et al. 2006, 2010).

By our view, the most important factor in producing these positive team process results (team leadership and culture) and the teams' sustainability funding is the proactive support provided by Prevention Coordinators to the teams. In addition, yearly statewide team meetings (attended by all local team members) have been instrumental in building a sense of community and cross-learning among the teams in each state. Finally, in Year 3 of PROSPER we initiated bi-monthly, day-long learning communities involving each community's team leaders. These learning communities have been key in providing more advanced skills to team leaders that have had a major impact on their teams functioning (Mincemoyer et al. 2008).

Experience gained during formative stages of the PROSPER implementation, and more recent experience in assisting additional states with laying the groundwork for PROSPER implementation, has been instructive. It has underscored the importance of devoting considerable effort to building capacity, upfront, for supporting effective team functioning—capacity building at all levels of the partnership—and for cultivating team leadership development during the earliest phases of implementation. Accordingly, we have developed strategies for enhancing partnership readiness and capacity early on; also, we are planning to design and test a team leadership development protocol with collaborators.

EBP Implementation Quality

Community teams have achieved high recruitment rates for program participation (Spoth et al. 2007; Meek et al. 2004). Also critically important, all programs have been carried out with high levels of implementation quality, with greater than 90% adherence overall for both the family and school programs (Spoth et al. 2007, in press).

From the outset, our technical assistance to team leaders and teams emphasized the importance of implementation fidelity, following three primary strategies which we have found helpful. First, we reviewed data showing how implementation fidelity was related to outcomes for the chosen programs. Second, in the initial years, fidelity observers were funded by PROSPER and regularly observed program delivery (Spoth et al. 2007). Subsequently, prevention coordinators worked with our experienced teams to conduct their own fidelity observations that are submitted to the statewide network. Third, we have provided continual training of program facilitators to update their skills and have provided feedback on their performance.

Sustainability of Teams and EBPs

Because of its great importance, we will devote more detail to the description of the sustainability impact challenge. As concerns findings, most PROSPER community teams have sustained their programming efforts for 8 years. Teams were required to support their local programming by Year 4. Currently, the average team has raised over $23,000 per year to support its activities (Feinberg 2009).

PROSPER research (Greenberg et al. 2007) suggests that sustainability is influenced by team members' experiences with collaboration and their attitudes toward prevention in general. Sustainability also is influenced by the relationships between the PROSPER team and other community stakeholders who may control or compete for resources. Effective

communication and engagement are critical to success. Other influences can include the culture of the local Extension and school systems, the team's capacity to complete their work, the degree and quality of sustainability planning, and technical assistance provided from the state level.

We introduced sustainability goals as a priority during the formative stage—the first year of PROSPER implementation. In retrospect, we believe this early emphasis was very important. During the second and third years, we developed and presented a sustainability model (see Fig. 2). As outlined in Fig. 2, the overriding purpose and goals were delineated; related objectives were mapped onto eight strategies. Teams have employed a wide range of creative and innovative tactics in their implementation of each strategy. All eight strategies have proven to be helpful and can be summarized as follows:

- *Resource Generation for Programs*: Generating financial, in-kind, and volunteer support to maintain both the family-focused and school-based EBPs and to increase the program offerings as time goes on.

- *Community/School Positioning*: Ensuring that the PROSPER team and EBPs are viewed positively in the community and that the school and community as a whole recognize how the team contributes to the betterment of youth and families.

- *Program Quality Management/Planning*: This strategy includes all the steps required to monitor programs for quality implementation, including securing and training observers, scheduling observations, collecting data, providing feedback, and so on.

- *Strengthening Partnerships with Schools/Other Organizations*: This strategy entails team activities that create an interdependent relationship among the team, the school, and community groups whereby PROSPER activities and programs serve to meet mutually beneficial goals.

- *Strategic Communication Planning*: Teams that have developed communication plans have enjoyed more success in generating awareness for PROSPER activities, financial support for programs, and participation in the family-based program.

- *Planning for Recognition and Rewards*: This is an important step to sustain interest in and support for PROSPER team activities and programs. Rewards and recognitions can include team members, program participants, and supporters from the school and community.

- *Monitoring Team Structure, Roles, and Participation*: To ensure that the team continues to perform effectively and that team members remain enthusiastic about PROSPER efforts, Team Leaders and Prevention Coordinators spent considerable time addressing the teams' current levels of functioning. Together with the team, the Team Leader and Prevention Coordinator develop continuous improvement plans that address all of the strategies in the sustainability model, as appropriate.

- *Conducting Effective, Regular Meetings*: The team is integral to the sustainability of programs. Regular meetings are emphasized and their effectiveness is discussed as part of a continuous improvement plan.

The early sustainability phase was conceptualized as a "bridge toward sustainability." Prevention Coordinators worked closely with teams to develop strategic plans that mapped onto the model in Fig. 2. Sustainability was regarded primarily as a process and less as an outcome. Subsequently, teams actively solicited local funds to continue implementation of family and school EBPs. To accomplish this it became clear that very focused and extended technical assistance was necessary. This included regular seminars and training on how to:

(1) leverage resources; (2) prepare presentations and media that were tailored for different audiences (school boards, local foundations, elected officials); (3) use local data to show implementation quality and positive outcomes; (4) conduct effective media events that recognize community efforts; and (5) address turnover of team members and community stakeholders (e.g., superintendents). We created videos, boilerplate sections for grants, PowerPoints and other media that teams tailored to local circumstances.

This work is consistent with the literature that suggests three key factors related to sustainability (Spoth et al. 2010). The first factor is the quality of team planning and readiness to move toward local sustainability. The second is effective management of team membership turnover, including effective orientation of new members and recruitment of members that are influential in local funding. The third is close and continuous monitoring of community team goals and benchmarks, with provision of feedback to the community team and stakeholders about their functioning. In addition, we have found it important to implement ongoing strategies designed to sustain engagement of team members, on an ongoing basis, including cross-site meetings with presentations that highlight team accomplishments. We believe that it is critically important to pay close attention to these factors, and to the types of strategies delineated here, because sustainability increases the likelihood of increasingly more wide-ranging community-level effects. That is, it becomes the basis for community-level effects including increased community awareness of EBP benefits, enhanced social capital (Mincemoyer et al. 2008) and positive peer network influences (Osgood et al. 2010).

Demonstrating Community-Level Impact

Results showed positive effects on family strengthening (e.g., family cohesion), parenting (e.g., more consistent discipline, warmth in parent–child relationship, increased involvement in child activities), and youth skill outcomes (e.g., problem solving, peer resistance) that also influence longer-term adolescent behavioral outcomes (Redmond et al. 2009; Spoth 2009). Youth that participated in programs implemented through the PROSPER delivery system showed significantly lower rates of a number of negative behavioral outcomes, including drunkenness, cigarette use, marijuana use, meth use, and use of other illicit substances, up to 4½ years past baseline (Spoth et al. 2007, in press). In addition, at a community level, PROSPER has increased local social capital, as evidence by significant increases in the positive perception of Cooperative Extension and of school leadership (Perkins et al. 2006; Mincemoyer et al. 2008).

We have concluded that it is very important to develop data systems for monitoring progress relative to goals and benchmarks at each phase of team development, including monitoring quality of the community-team functioning, and to evaluate EBP-targeted outcomes. Monitoring progress entails mechanisms for providing data-based feedback to community teams that help continuous quality improvement (community team functioning, intervention implementation quality, sustainability).

Developing Technical Assistance Systems: Lessons and Challenges

Woven throughout our earlier summary of findings and lessons is reference to technical assistance. As noted, from the outset, technical assistance and training were delivered proactively with Prevention Coordinators communicating with each team on a bi-weekly basis, visiting team meetings at least six times per year, holding yearly statewide team gatherings, and providing bi-monthly learning communities for team leaders. Although we have not had the opportunity to conduct thorough and direct empirical testing of the relationship between technical assistance factors and implementation outcomes, we have demonstrated a positive relationship in the case of recruitment rates (Spoth et al. 2007).

Ongoing and proactive technical assistance and support systems were central to the PROSPER model design, consistent with earlier literature (Feinberg et al. 2008; Mihalic and Irwin 2003; Spoth et al. 2007). Perhaps the most important lesson we have learned is that carefully designed technical assistance and support systems are critically important to meeting basic challenges in the achievement of community-level impact overall. We believe that technical assistants working directly with prevention scientists in a three-tier partnership structure can be especially effective. Metanalyses suggest that researcher involvement is, on one hand, associated with considerably larger effect sizes but, on the other hand, direct involvement in all implementation efforts is impractical in scaling up EBPs (Welsh et al. 2010). As described in earlier reports (Spoth et al. 2007), PROSPER represents a hybrid model that combines community-based and researcher inputs on an ongoing basis, with an orientation toward collaborative learning. In conjunction with this combination, PROSPER state partnerships present a way of involving researchers that can boost effect sizes while remaining practical for large-scale implementation. Again, the PROSPER partnership structure seems to be key. Specifically, it supports a technical assistant team working closely and collaboratively with both community teams and university scientists/administrator teams; it has open lines of frequent, bidirectional communication (between community teams and technical assistance teams that are highly interactive with university-based scientists). This structure effectively supports ongoing collaborative learning and ongoing collaborative problem solving in community-based EBP implementation.

In sum, our proactive technical assistance involves teamwork with scientists and provides a mechanism for: (1) supporting positive community team functioning; (2) monitoring selection, adoption, implementation of EBPs and adherence to intervention quality protocols; and (3) ongoing quality improvement. Optimally, it facilitates sustainability of both the community teams and the EBPs they implement. It is provided to all of those involved in the effort, whether involved in community team leadership, administrative or implementer roles.

Considerations in the Application of the PROSPER Partnership Model to Violence Prevention

The conceptualization of the PROSPER partnership model allows for its application to the implementation of a broad array of EBPs (e.g., those targeting early childhood and healthy lifestyles). Currently, it is focused on EBPs primarily targeting substance misuse prevention and positive family and youth development, with secondary targeting of conduct problems (e.g., PROSPER implements family-focused and school-based EBPs addressing both substance misuse and conduct problems). Further, in its current application, the PROSPER partnership model is focused on the implementation and sustainability of universal interventions, rather than interventions that are targeted to youth who already are showing early risk behaviors. In other words, violence and delinquency prevention are not an exclusive or primary goal of EBPs in the current PROSPER model; in addition, emphasis is on EBPs administrated during middle school, with EBPs added for elementary schoolers once community teams have matured.

The foci of the current PROSPER partnership model application notwithstanding, we believe that all of the aforementioned lessons learned—concerning sustainable, community teams that implement EBPs with high quality and in a sustainable manner—apply to community-based partnerships that would primarily implement programs to prevent violence, such as those reviewed by Guerra et al. (2008). If the PROSPER model were primarily directed toward violence prevention more broadly, it would likely benefit from some adjustments. These would include those addressing the composition of the PROSPER community team, the specific EBPs placed on the menu, and the grade levels at which they

might be implemented. For example, PROSPER community teams are charged to include members representing substance use and mental/behavioral health agencies on their teams. If violence prevention EBPs were the primary focus, leaders or representatives of the local police department, juvenile probation, the local court system, and agencies focused on violence and its prevention would be more central to effective team planning and action. Second, given the early stability of aggression (Dodge et al. 2008), it is likely that interventions might begin in the preschool or early school years; similar to current PROSPER model applications, such would likely involve both parenting/family EBPs as well as school-based EBPs. Third, well-integrated universal and targeted EBPs might well be required to maximize effects on children who are at highest risk (see Conduct Problems Prevention Research Group 2000, in press).

While the PROSPER partnership model has not been utilized to date with a primary focus on violence prevention, another community-based partnership model, Communities That Care (CTC), has incorporated a wider range of EBPs addressing both substance misuse and delinquency; notably, CTC has measured community-level outcomes or delinquency. (The PROSPER randomized control trial also has measures of delinquency, but long-term outcome analyses have not been conducted). Moreover, there have been evaluations of the CTC model that have demonstrated impact on delinquency (e.g., Hawkins et al. 2009). Importantly, the study of CTC implementation and effectiveness for reducing delinquency supports the importance of the five key challenges to achievement of community-level impact we have addressed in this article. Consistent with the PROSPER lessons and findings described above, collaborative models like PROSPER and CTC demonstrate that when the five key challenges are appropriately addressed, community collaboratives can make a substantial contribution to reducing risk factors, increasing protective factors, and reducing the public health burden of both substance misuse and violence or delinquency.

Grand Impact Challenges: EBP Delivery Infrastructures and Practitioner-Scientists Partnership Networks for Scaling-Up EBPs and Advancing Translational Research

EBP Delivery Infrastructures

Kerner et al. (2005) state that "…efforts to move effective preventive strategies into widespread use too often have been unsystematic, uncoordinated, and insufficiently capitalized…little [is] known about the best strategies to facilitate active dissemination and rapid implementation of evidence-based practices…[without] infrastructure for dissemination, it is likely that many evidence-based interventions will remain on the shelves" (pp. 443–444). Moreover, Mabry and colleagues (Mabry et al. 2008), highlight how interventions, once off the shelves, often are "defeated" by the infrastructures and systems intended to support them (e.g., extant policies cause resistance to effective intervention implementation).

Sounding a note similar to that of Kerner et al. (2005), Kreuter and Bernhardt (2009) claim that a fundamental obstacle to successful translation of EBPs into broader practice is the lack of infrastructure for what they describe as EBP distribution systems, along with limited effectiveness in marketing EBPs. They add that it is necessary to build delivery capacity by linking "subsystems" to increase availability of EBPs and that comprehensive systems of user support are essential. This idea dovetails the Interactive Systems Framework proposed by Wandersman and colleagues (2008). Specifically, they advocate for a broad perspective —addressing consumer, practitioner and scientist points of view—one that starts with focus on the infrastructures and systems supporting dissemination and implementation functions, across a range of EBPs. Wandersman et al. (2008) describe their "interactive systems

framework" that integrates functions of delivery, capacity building or support, and related knowledge dissemination, with a community-centered focus.

Together, these authors and other authors on this topic (Backer 2000) make several key points central to our proposed approach to EBP delivery models. That is, we need a broader perspective that integrates community/consumer and practitioner perspectives with that of prevention scientists. This broader perspective begins with careful consideration of infrastructures to support practitioners and scientists collaborating to translate science into prevention practice. It also addresses factors in successfully executing the basic translational functions (EBP dissemination and implementation on a large scale), entailing linkages among delivery subsystems.

How PROSPER Addresses the EBP Delivery Infrastructure Challenge

As noted earlier, PROSPER entails linkages among delivery subsystems and builds on existing public education infrastructures, fostering the strengthening of infrastructure that supports effective delivery of EBPs. Although it has been implemented primarily in rural communities and small towns/cities (of up to approximately 75,000 in population), we have a long-term plan to adapt implementation to more urban areas. The previous section summarized how PROSPER addresses the basic implementation functions and related challenges to translating science into practice at the community level. In addition, and most importantly, PROSPER strategically builds capacity within the linked CES and public school infrastructures, with the ultimate goal of transforming state EBP implementation systems. It does so by addressing the key elements in the system transformation process described by the National Implementation Research Network (NIRN, National Implementation Research Network 2010).

The basic concept of systems transformation in the NIRN model is that a new system for the delivery of EBPs is "incubated" and its growth is facilitated, while the old system of delivery of non-EBPs continues to operate. Eventually, the new system replaces the old. A fundamental requirement for this type of transformation is that system and EBP implementer goals and strategies for achieving them be aligned. This begins with what has been described as a transformation or innovation zone, defined as a "vertical slice" of a system that is small enough to be manageable, but large enough to include all of the relevant aspects or levels of the system. Working in this zone allows ready emergence of enablers of the systems change as well as barriers to change, so that enablers can be further strengthened and barriers can be addressed through ongoing and systematic problem solving. Effectively, this type of zone is created when PROSPER works within a subset of communities in a state. Such work entails a well-circumscribed "vertical slice" of the state CES and linked program delivery systems, as described in the section on the three-tiered model.

Because CES systems are structured at the state level, and led through their respective land-grant universities, there is the opportunity for close coordination between university faculty and the CES system itself. Related to this point, a central goal of PROSPER is to catalyze systems transformation at the state CES systems-level in order to make the support and implementation of EBP system delivery a central state activity. This entails CES system strategic planning, including transformation of program planning, staff hiring, course offerings, training, and so forth. Such system transformations at the state level are necessary to sustain achievements at the local level. As PROSPER expands to additional communities within a state, the "vertical slice" becomes increasingly broader and the systems transformation becomes better established.

Networks of Practitioner-Scientist Partnerships

The second grand impact challenge is nurturing practitioner-scientist partnership networks that promote both EBI scale-up and translational research. This challenge is linked with the first, considering how EBP delivery systems can facilitate such partnerships (Backer 2003), especially in the case of public education. An earlier special issue of the *American Journal of Community Psychology* (Spoth and Greenberg 2005) addressed issues, challenges, and benefits of practitioner-scientist partnerships. It highlighted "natural tensions" between practitioners and scientists, concerning both goals and methods of the respective groups. Tensions concern, for example, implementation fidelity, with practitioners often more inclined toward adaptation and scientists emphasizing closer fidelity to intervention protocols. Articles in the 2005 special issue address creative solutions to tensions that focus on creating successes with collaborative relationships (Price and Behrens 2003; Wandersman et al. 2005). Such methods included identifying common ground and shared goals, and ongoing dialogues, particularly in the context of university engagement with communities. In this context, it was noted how the land-grant university system is particularly well-suited to this community engagement (Kellogg Commission in the Future of State and Land Grant Universities 1999; Spanier 1999).

In our article in the special issue, we (Spoth and Greenberg 2005) noted two interrelated priorities for the development of practitioner-scientist partnerships, expanding the knowledge base on processes and outcomes of partnerships within communities; and learning how to increase capacity for diffusion of practitioner-scientist partnerships across communities and states. To accomplish the latter, we recommended: (a) theoretical grounding in Diffusion of Innovation Theory, with special attention to a bounded normative influence model (Kincaid 2004) that suggests strengthening the roles of influential champions in "bounded" areas (e.g., communities within a county, or a group of counties) within existing program delivery systems; (b) developing a comprehensive strategic framework that addresses multiple youth problem behaviors and competency building, along with networking and capacity-building across communities; (c) expanding networks of partnerships, (d) clarifying the relevant research agenda and related issues; and (e) clarifying policy to support capacity building. Subsequently, in the article we address several topics: how our PROSPER lessons could inform development of a strategic framework; the benefits of expanding networks; and the need for supportive policy at the federal agency level.

Although the literature presents some guidelines for developing practitioner-scientist partnership networks, there has been limited effort to distill guiding principles for developing effective community-focused partnership networks in prevention. Doing so lies beyond the scope of the present article; nonetheless we will note some key characteristics of effective practitioner-scientist networks gleaned from the literature. One noteworthy characteristic of successful practitioner-scientist partnerships, for example, is emphasis on a structure that supports a *collaborative learning process* (Lindbloom et al. 2004; Mold and Peterson 2005; National Research Council and the Institute of Medicine 2009; Westfall et al. 2007). This is well-illustrated by a number of the articles in the current issue. A second key characteristic is facilitating research to advance science-to-practice translation. For example, the current issue illustrates how community-based research networks are well-suited for translational research. These efforts allow *embedded research projects* that examine factors contributing to EBP adoption, quality implementation and sustainability, and demonstrate whether strategies informed by such knowledge are truly effective in real world conditions (Spoth et al. 2010).

How PROSPER is Addressing the Practitioner-Scientist Network Challenge

The PROSPER network team is developing a cross-state network of practitioner-scientist partnerships with the dual goals of larger-scale EBP delivery and the conduct of "embedded" implementation and dissemination research. Recently obtained funding has supported efforts to build capacity in other states to implement the PROSPER model, including linkages with Public Health Systems. This will enable a multi-state collaborative learning process like that envisioned by the IOM (Institute of Medicine 2009), with specific research projects embedded in ongoing model implementation, examining factors influencing EBP adoption, implementation quality and sustainability. For example, data collected from CES and public school system stakeholders—concerning how they define EBPs and what they consider to constitute evidence for effective programs—is suggesting strategies for better communicating and marketing EBPs that will be evaluated in a controlled study (see Crowley et al. Manuscript in preparation).

We have observed how PROSPER's scientist-practitioner-partnerships have fueled systems transformation. As indicated in the prior section on meeting the grand infrastructure development challenge, we have witnessed how the combination of five PROSPER model features contribute to systems transformation. The first is the 3-tiered state partnership structure supporting what we view as an optimally constructive role for scientists directly informing the conduct of all aspects of technical assistance in a state, as part of a team effort, in a practical, real-world-viable way. The second is consistently open lines of communication within and across teams at all tiers of the structure, with common language and attitudes concerning EBPs. The third entails following an incubation approach to systems transformation when initiating work within a state, as described earlier. The fourth is community-level social capital evolving out of sustained teams with sustained EBP activity within the community, and the last is a strong orientation toward science-with-practice that is a natural extension of the CES mission.

Conclusion

We have used the PROSPER model to illustrate how practitioner-scientist partnerships and supporting infrastructures—ones that provide and sustain EBPs to support youth development, can produce community-level reductions in youth problem behaviors and concomitant positive youth development. We have learned that to achieve such results careful attention must be paid to the challenges to achieving community-level impact. Lessons learned from our approach to these challenges map onto literature that highlights important or "core" factors in successful community-oriented prevention systems. These factors include: (1) implementation of a multiphased developmental framework for community-based teams working in partnership with supporting organizations and systems; (2) well-integrated process and outcome evaluation, utilizing data systems to (a) monitor community progress relative to goals and benchmarks at each phase of development and (b) assess youth outcomes; (3) implementing proven programs that address key community-chosen outcomes; (4) ongoing monitoring of the implementation quality of specific programs, practices and policies employed; (5) a strategic plan for sustaining community prevention teams' efforts; (6) ongoing, proactive training and technical assistance for community teams (Spoth et al. 2010). Most importantly, addressing the grand challenges of infrastructure development and practitioner-scientist partnership networks is needed to support all of the above core factors (Derzon et al. 2005; Durlak and DuPre 2008; Greenberg et al. 2007; Hawkins et al. 2008; Mihalic and Irwin 2003; Spoth et al. 2007, 2010).

Accomplishing effective EBP implementation in many communities throughout the US will benefit from not only strong university-community research-practice networks, but also will necessitate changes in policies (both state and national) and operating procedures. Policies

and procedures are required to support braided funding between "territorial" or silo agencies, along with financing for the necessary infrastructural support to accomplish these goals. Prevention of youth problem behaviors does not fall solely in the domain of any single agency; broad-based prevention efforts require braiding service and research funding to increase the capacity to intervene in a sustained and effective way. There is clear evidence that a range of youth-related outcomes falling under domains of multiple federal agencies can be affected positively by preventive interventions that target common risk and protective factors. Related to this point, collaboration among stakeholder federal agencies would be facilitated by constructing a readily explainable framework for the constellation of outcomes that are important across the federal stakeholders, including an understanding of: (1) why the agencies should be jointly engaged; (2) the risk and protective factors that cross over their interest areas; (3) how these factors cluster, and (4) how the evidence that many interventions delivered in early childhood, elementary school, middle-school positively affect the collective outcomes of interest. The US Department of Education and State Public Education Departments can play a key role in both supporting prevention as part of the educational process as well as through provision of integrated data systems for examining outcomes. Without such multiagency support we will not be responsive to Woolf's (2008) admonition with which this article opened. Nor will we reach our goal of translating the science of preventive interventions into everyday community practice, to facilitate youth development and improve of community health and well-being.

Acknowledgments

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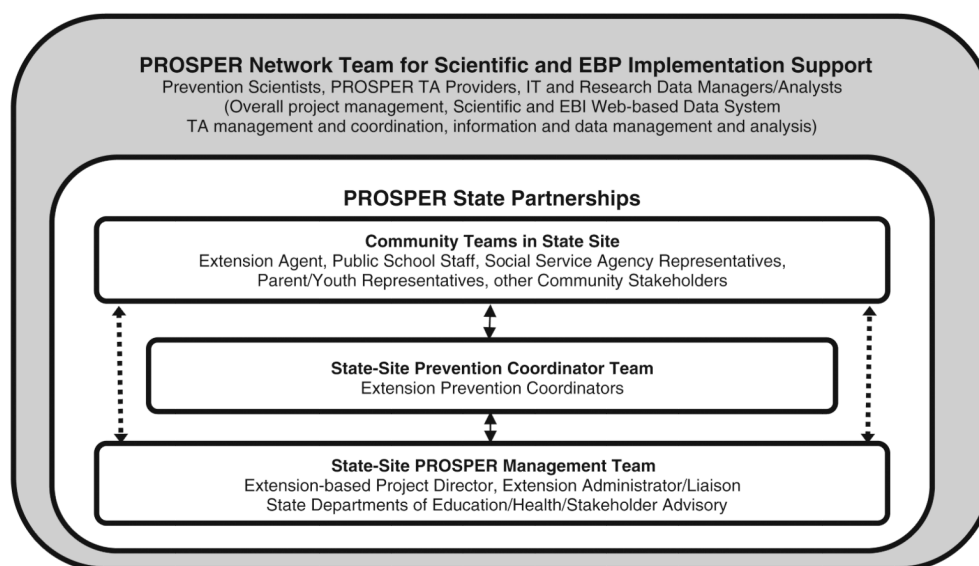
PROSPER Network Team for Scientific and EBP Implementation Support
Prevention Scientists, PROSPER TA Providers, IT and Research Data Managers/Analysts
(Overall project management, Scientific and EBI Web-based Data System
TA management and coordination, information and data management and analysis)

PROSPER State Partnerships

Community Teams in State Site
Extension Agent, Public School Staff, Social Service Agency Representatives,
Parent/Youth Representatives, other Community Stakeholders

State-Site Prevention Coordinator Team
Extension Prevention Coordinators

State-Site PROSPER Management Team
Extension-based Project Director, Extension Administrator/Liaison
State Departments of Education/Health/Stakeholder Advisory

Fig. 1.
PROSPER's four-tiered partnership. *Dashed lines* represent intermittent direct contact; *solid lines* represent regular direct contact. *Shaded areas* represent modifications of the original PROSPER model
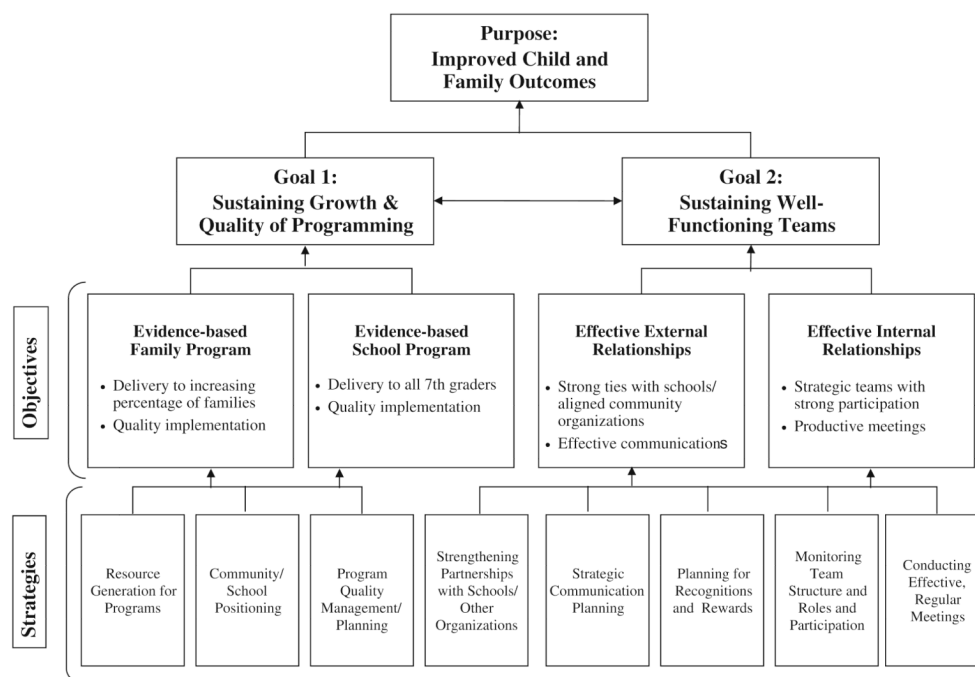
Fig. 2. PROSPER sustainability model